ORAL 30: Ornithoros tick salivary, an intrinsic component of vector competence in transmission of African swine fever virus to pigs

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Keywords: African swine fever, Tick saliva, cells recruitment; macrophages; Langerhans cells

African swine fever (ASF) is a lethal haemorrhagic swine disease with disastrous consequences for pig production. *Ornithodoros* ticks such as *O. erraticus* in Spain and Portugal, and *O. moubata sensu lato* in eastern and southern Africa are able to maintain and transmit the virus, and are competent vectors and reservoirs for ASFV (1). These ticks can maintain ASFV for years and transmit the virus through different routes such as transovarial and/or sexual transmission from tick to tick, as well as horizontal transmission to suids via contaminated saliva or coxal fluid. Vector competence in virus transmission can be related to extrinsic or intrinsic factors. Here we present the intrinsic effect of *O. porcinus* tick salivary gland extract on the African swine fever virus infection in domestic pig. During the early stage of pig infection with ASFV, mononuclear phagocytic cells are the main targets for viral replication (2). Tick saliva has been shown to modulate the host physiological and immunological responses during feeding on skin, thus affecting viral infection.

To better understand the interaction between soft tick, ASFV and pig at the bite location and the possible influence of tick saliva on pig infection by ASFV, salivary gland extract (SGE) of *Ornithodoros porcinus*, co-inoculated or not with ASFV, was used for intradermal auricular inoculation. Our observations focused both on the pig systemic immune response and on pig skin inflammation and cellular modulation (especially LCs and macrophages) at the tick bite location. Unlike previous studies, the assessment of such immune modulations was conducted on the natural host, domestic pigs, and a highly adapted tick-virus association with *O. porcinus* ticks collected from Madagascar and a Madagascan ASF virus strain.

Our results showed that, after the virus triggered the disease, pigs inoculated with virus and SGE presented greater hyperthermia than pigs inoculated with virus alone. The density of Langerhans cells was modulated at the tick bite or inoculation site, either through recruitment by ASFV or inhibition by SGE. Additionally, SGE and virus induced macrophage recruitment each. This effect was enhanced when they were co-inoculated. Finally, the co-inoculation of SGE and virus delayed the early local spread of virus to the first lymph node after the inoculation site. This study has shown that the effect of SGE was powerful enough to be quantified in pig, both on the systemic and local immune response (3).

We believe this model should be developed with infected tick and could improve knowledge of both tick vector competence and tick saliva immunomodulation.

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Acknowledgments:

This work was partly funded by the European Union Seventh Framework Programme (FP7/2007-2013) under Grant agreement no.311931 – ASFORCE, the General Council of Côtes d'Armor and the Regional Council of Languedoc Roussillon (Chercheur d'avenir project). JB received her PhD grant from CIRAD and ANSES.

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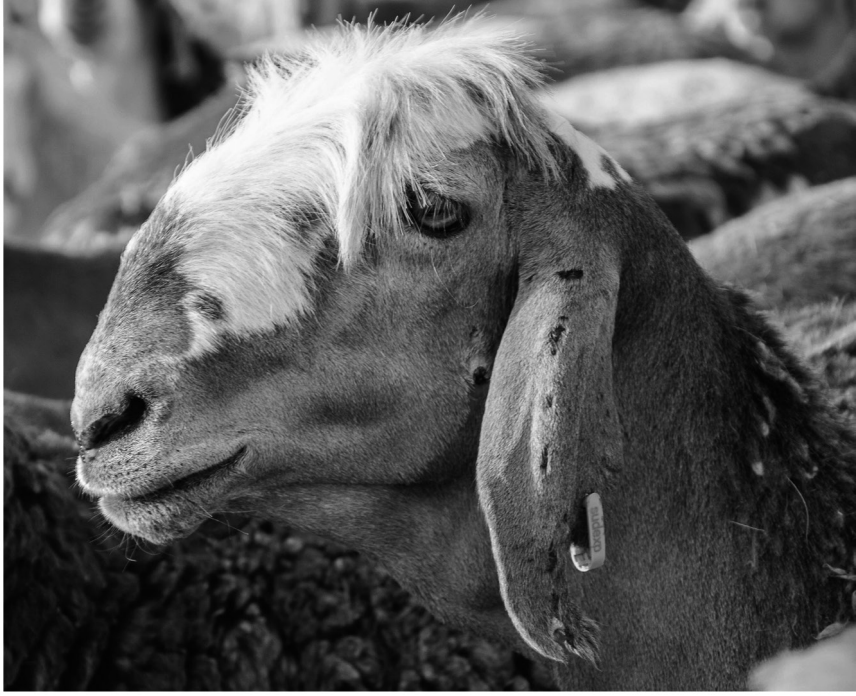

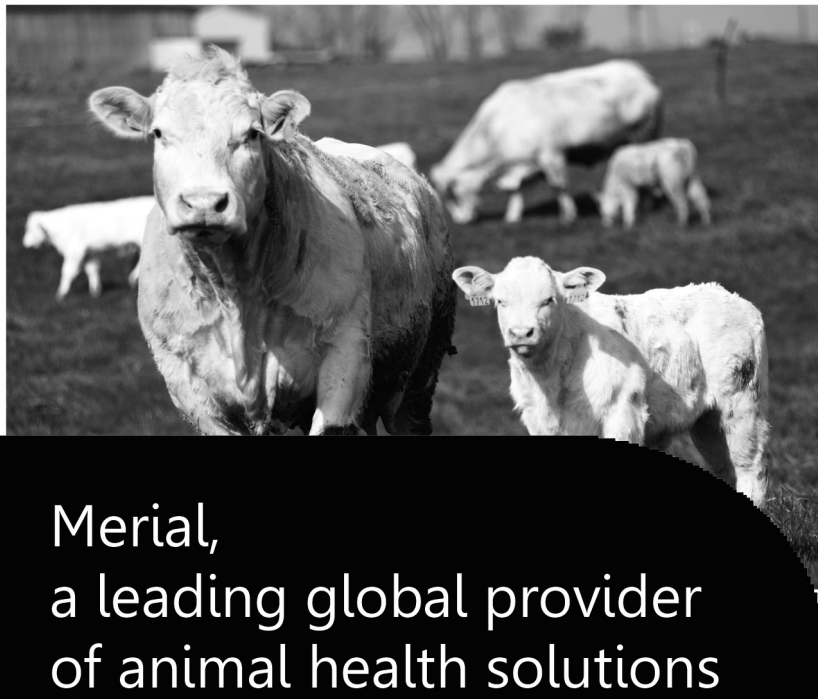

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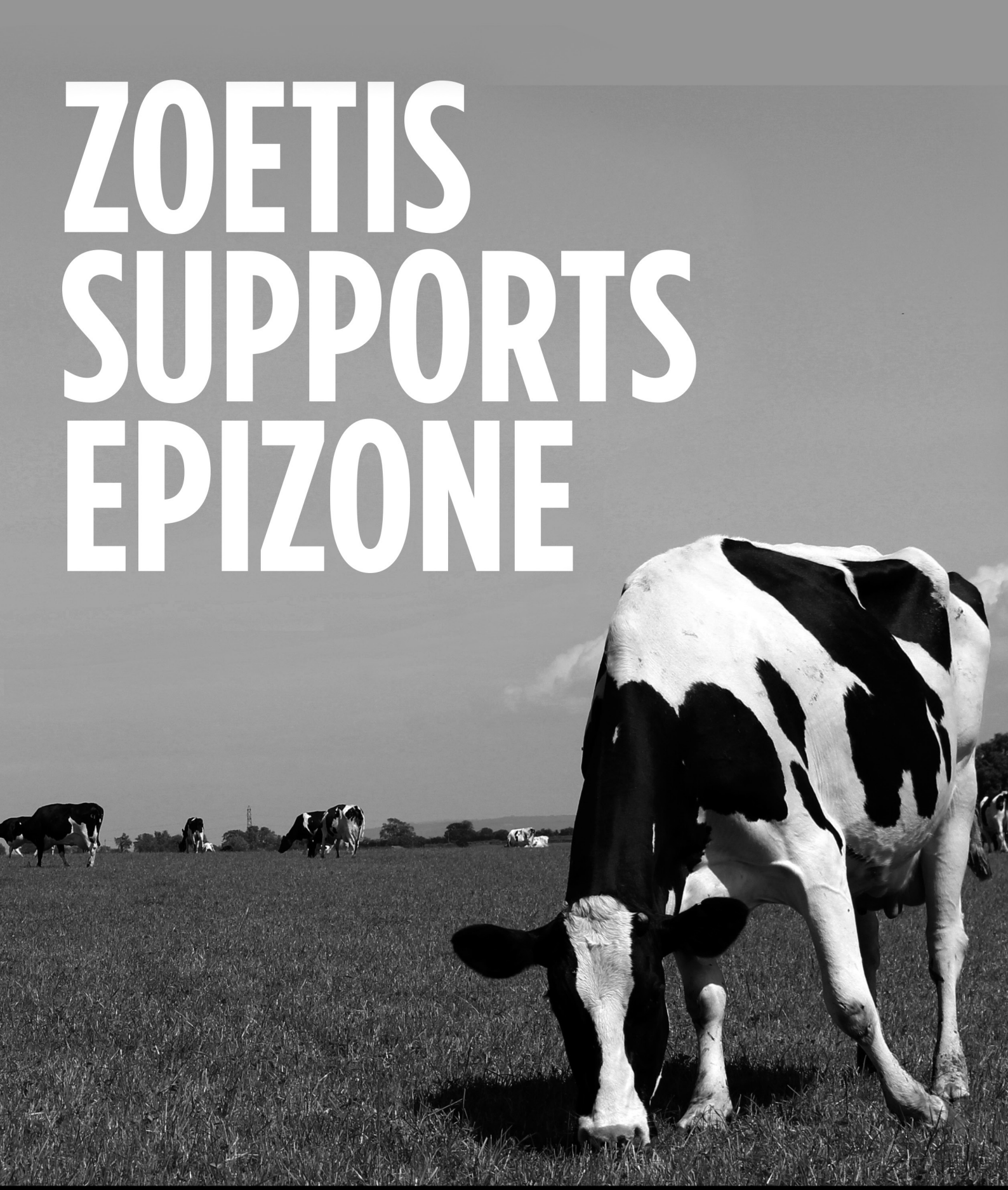

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Welcome
10th Annual Meeting EPIZONE "Going Viral"

It is a great honour and a privilege for me to give you all our warmest welcome to the Xth Annual Meeting of EPIZONE, the first to be celebrated in Spain. INIA-CISA, as the host institution, has been fully committed on this challenge from the beginning, and we do hope that the final result will be satisfactory for participants, sponsors and organizers. We wish to thank specially to them, as this event could not be possible without any of these essential parts. The financial support from sponsors, the availability and contributions from keynote speakers, the high scientific level of oral and poster presentations from participants and, at the end, curious, active and interested assistants, will contribute to the success of the meeting. From the organizing committee I want also to thank the EPIZONE secretariat and coordinator for their continuous help and implication in the effort. Finally, my gratitude to the people at the local and international scientific and organizing committees that have been working together very hard to yield a balanced, wide-scoped and intense (maybe too intense?) programme. Special thanks to Jovita Fernandez Piñero, who has been in charge of many tasks, and has fulfilled a brilliant labour. And will not forget about the enthusiastic Young Epizone people; thank you for your work and for organizing such a well-designed session.

Under the general title of "Going Viral", and from a *One Health* perspective, we have outlined three concentric circles defining the main topics:

Topic I: Animal Health in a changing World, dealing with global threats for animal health.

Topic II: Threats at the European border, paying attention to diseases in the neighbouring areas.

Topic III: Current challenges inside Europe, where the main diseases affecting the European countries will be discussed.

As in previous EPIZONE meetings, diagnostics, intervention strategies, epidemiology and surveillance, risk analysis and some other aspects will be approached by recognized experts in specific sessions. Many diseases which are familiar to us will receive attention, from Foot and Mouth Disease to West Nile Virus Disease or the more recent episodes by Lumpy Skin Disease, Pest des Petits Ruminants and some others. African Swine Fever and Bluetongue have been the most "popular" diseases among contributors, this revealing their current relevance.

I hope that the efforts of contributors, sponsors, participants and organizers will provide an opportunity for the "epizootic community" to work together, to plan new initiatives, to interact and to share a good time in Madrid.

Victor Briones

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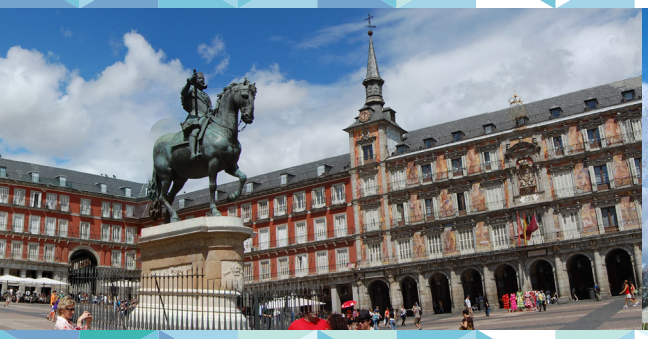

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